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Docket No.: M-7971 US



August 6, 2001

Commissioner For Patents  
Washington, D.C. 20231

Re: Applicant(s): Zagoskin, Alexandre M.  
Assignee: D-Wave Systems, Inc.  
Title: Permanent Readout Superconducting Qubit  
Serial No.: 09/452,749  
Examiner: D. Wille  
Docket No.: M-7971 US  
Filed: December 1, 1999  
Group Art Unit: 2814

Dear Sir:

Transmitted herewith are the following documents in the above-identified application:

- (1) Return Receipt Postcard;
- (2) This Transmittal Letter (in duplicate); and
- (3) Response to Office Action (14 pages).

☒ The fee has been calculated as shown below:

**CLAIMS AS AMENDED**

	Claims Remaining <u>After Amendment</u>		Highest No. Previously <u>Paid For</u>		Present <u>Extra</u>	<u>Rate</u>		Additional <u>Fee</u>
Total Claims	42	Minus	27	=	15	x \$9.00	\$	135.00
Independent Claims	4	Minus	3	=	1	x \$80.00	\$	80.00
<input type="checkbox"/>	Fee of _____ for the first filing of one or more multiple dependent claims per application							\$
<input type="checkbox"/>	Fee for Request for Extension of Time							
<b><u>Total additional fee for this Amendment:</u></b>							\$	<u>215.00</u>
<input checked="" type="checkbox"/>	Conditional Petition for Extension of Time: If an extension of time is required for timely filing of the enclosed document(s) after all papers filed with this transmittal have been considered, an extension of time is hereby requested.							
<input type="checkbox"/>	Please charge our Deposit Account No. 19-2386 in the amount of							\$ <u>215.00</u>
<input checked="" type="checkbox"/>	Also, charge any additional fees required and credit any overpayment to our Deposit Account No. 19-2386.							
<b>Total:</b>							\$	<u>215.00</u>

VIA EXPRESS MAIL LABEL NO.  
EL 701 022 103 US

Respectfully submitted

Gary J. Edwards  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Zagoskin, Alexandre M.  
Assignee: D-Wave Systems, Inc.  
Title: Permanent Readout Superconducting Qubit  
Serial No.: 09/452,749 Filing Date: December 1, 1999  
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San Jose, California  
August 7, 2001

COMMISSIONER FOR PATENTS  
Washington, D. C. 20231

**AMENDMENT**

Dear Sir:

This communication is responsive to the Office Action mailed on May 07, 2001, in the above identified application. Please amend the application as indicated. Clean copies of the amendments are listed below while mark-ups illustrating the amendments are presented in the attached Appendix of Amendments.

**In the Specification**

On Page 2, please replace the paragraph starting on line 8 and ending on line 19 with

Quantum computing generally involves initializing the states of N qubits (quantum bits), creating controlled entanglements among the N qubits, allowing the quantum states of the qubits to evolve under the influence of the entanglements, and reading the qubits after they have evolved. A qubit is conventionally a system having two degenerate quantum states, and the initial state of the qubit typically has non-zero probabilities of being found in either degenerate state. Thus, N qubits define an initial state that is a combination of  $2^N$  degenerate states. The entanglements control the evolution of the distinguishable quantum states and define calculations that the evolution of the quantum states perform. This evolution, in effect, performs  $2^N$  simultaneous calculations. Reading the qubits after evolution is complete determines the states of the qubits and the results of the calculations.

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